



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/687,322

10/16/2003

Robert Urscheler

62738C

8774

109 7590 10/15/2007
THE DOW CHEMICAL COMPANY
INTELLECTUAL PROPERTY SECTION, P. O. BOX 1967
MIDLAND, MI 48641-1967

EXAMINER

FORTUNA, JOSE A

ART UNIT

PAPER NUMBER

1791

MAIL DATE

DELIVERY MODE

10/15/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/687,322	URSCHELER ET AL.	
	Examiner	Art Unit	
	José A. Fortuna	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-20,22-34,36 and 37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-20,22-34,36 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/31/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Double Patenting***

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1791

2. Claims 2-34 and 36-37 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10, 17-43, 45-60, 62, 64-72 and 74-82 of copending Application No. 10/257,172. The difference in scope between the claims of the copending applications is the limitation of the viscosity of the coating layers. However, applicants admit that the high solid content pigments coating composition have viscosity within the claimed range, see paragraph bridging pages 3 and 4 of the present application and therefore, the viscosity of the coating agent of the copending application is within the claimed range or at least the modification of the viscosity would have been obvious to one of ordinary skill in the art.

This is a provisional obviousness-type double patenting rejection.

Claim Objections

3. Claims 8-9 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 8 recites that the layer of the paper contains a pigment. Yet the same limitation is recited in the independent claims 3 and 4, and therefore failing to further limit the claims. Claims 3 and 4.

4. Claims 3 and 4 are objected to because of the following informalities: the phrase "the morphology of which" should be changed to clearly define what is or could be changed, i.e. the pigment or the composition. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1791

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 2-19, 22-25, 29-32, 34, and 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al., US Patent No. 5,789,031 in view of Clarke et al., US Patent No. 6,099,913 or Suga et al., US Patent No. 5,393,571.

Hirabayashi et al. teach a printing paper, see abstract. They also teach that the coating can be applied to one of both sides by means of an on or off machine coater, such as a curtain coater, and they also teach that the solid content of the coating color, pigments, is from about 40 to 70%, column 6, lines 13-33. Hirabayashi et al. teach in the lines above that the coating can be applied to the base paper from about 3 to 50 g/m² per side. Hirabayashi et al. also teach the use of polyvinyl alcohol as part of the coating, column 5, lines 28-38. Hirabayashi et al. teach the use the same pigments as disclosed/claimed, column 6, lines 7-12; same binders as claimed/disclosed, column 5, lines 40-52; the use of surfactants and PEO, column 4, lines 56-67; same paper or paperboard grammage as claimed, column 6, lines 22-33. Even though Hirabayashi et al. do not explicitly disclose the viscosity at the shear rate and temperature as claimed, both Suga et al. and Clarke et al. teach that for multilayer curtain coatings, the viscosity of the coating composition should be high at high shear rates in order to eliminate/reduce air entrapment and puddling, Clarke et al., column 3, lines 41-50 and 60-67 and to eliminative sagging, heeling and air entrapment, Suga et al., column 2, lines 10-26, when the curtain coating is operated at high speeds. Note that both Suga et al. and Clarke et al. teach viscosity at high shear rates above 50 cps, (50 mPa.s⁻¹). Therefore, adjusting the viscosity to the claimed levels, i.e., using thickening, gelling agents, etc., would have been obvious to one of ordinary skill in the art in order to operate the coating process at high speeds while reducing sagging, air entrapment, heeling, and puddling. Note also that applicants admits that in general the viscosity of coating slips at high shear rate is usually greater than 50 mPa.s⁻¹, see paragraph bridging pages 3 and 4. Note that both Suga et al.

Art Unit: 1791

and Clarke et al. teach web/coating speeds above 300 m/min, see examples, figures and tables. Regarding claim 33, The use of synthetic pigments, such as magadiite, would have been obvious to one of ordinary skill in the art since they are commonly used in the coating industry, see for example abstract of DD 221722, cited in IDS file on December 12, 2005.

Claims 2-19, 22-25, 26, 29-34, 36-37 are rejected under 35 U.S.C. 103(a) as obvious over Hirabayashi et al., US Patent No. 6,458,413 in view of Suga et al. or Clarke et al., both cited above.

Hirabayashi et al. teach a printing paper, see abstract. They also teach that the coating can be applied to one of both sides by means of an on or off machine coater, such as a curtain coater, and they also teach that the solid content of the coating color, pigments, is from about 40 to 70%, paragraph bridging columns 12-13. Hirabayashi et al. teach in the lines above that the coating can be applied to the base paper from about 3 to 50 g/m² per side. Hirabayashi et al. also teach the use of polyvinyl alcohol as part of the coating, column 5, lines 28-38. Hirabayashi et al. teach high viscosity coating slips, see abstract, but they are not explicit as to the viscosity at the claimed conditions, i.e., shear rate and temperature. However, both Suga et al. and Clarke et al. teach that for multilayer curtain coatings, the viscosity of the coating composition should be high at high shear rates in order to eliminate/reduce air entrapment and puddling, Clarke et al., column 3, lines 41-50 and 60-67 and to eliminative sagging, heeling and air entrapment, Suga et al., column 2, lines 10-26, when the curtain coating is operated at high speeds. Note that both Suga et al. and Clarke et al. teach viscosity at high shear rates above 50 cps, (50 mPa.s⁻¹).

Art Unit: 1791

Therefore, adjusting the viscosity to the claimed levels, i.e., using thickening, gelling agents, etc., would have been obvious to one of ordinary skill in the art in order to operate the coating process at high speeds while reducing sagging, air entrapment, heeling, and puddling. Note also that applicants admits that in general the viscosity of coating slips at high shear rate is usually greater than $50 \text{ mPa}\cdot\text{s}^{-1}$, see paragraph bridging pages 3 and 4. Hirabayashi et al. teach also the same binders as claimed/disclosed, column 12, lines 35-53; same paper or paperboard grammage as claimed, column 8, lines 26-29. Note that both Suga et al. and Clarke et al. teach web/coating speeds above 300 m/min, see examples, figures and tables.

Regarding claim 33, the use of synthetic pigments, such as magadiite, of claim 33 would have been obvious to one of ordinary skill in the art since they are commonly used in the coating industry, see for example abstract of DD 221722, cited in IDS file on December 12, 2005.

Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirabayashi et al., US Patent No. 6,458,413 in view of Suga et al. or Clarke et al., both cited above as applied to claims 1-19, 22-25, 26, 29-33 and 34-37 above, and further in view of Mitami et al., US Patent No. 5,773,093, cited in previous office action.

Hirabayashi et al. teach a printing paper, coated with an aqueous solution of polyvinyl alcohol and with coating weight between 0.5 to 5 g/m^2 , see abstract. They also teach that the coating can be applied to one of both sides by means of an on or off machine coater, such as a curtain coater, and they also teach that the solid content of the coating color, pigments, is from about 40 to 70%, column 12, line 58 through column 13, line 10. The calendering of the paper is

Art Unit: 1791

disclosed in column 6, lines 34-38. As to the speed of the web at the coating, Hirabayashi et al. teach that the coating operation can be done either on or off-machine, and it is well known that the speed of the web in an on-machine coater is within the claimed range. Hirabayashi et al. are silent with regard to the specific claimed velocities. However, Mitami et al. teach a curtain coater that can be used with coating liquids at any viscosity and solid content, i.e., solid matter, and can be operated at web speed over 2000 m/min, see column 6, lines 25-51. The advantages of using such device, coater, are taught in column 3, line 55 through column 4, line 56, some of which are: minimize the quality defects due to inferior drying, web tearing, and contamination of a coating apparatus, etc. Also the coating can be done at high speed, see column 6, lines 47-51. Therefore, using the coating apparatus taught by Mitami et al. in the process taught by Hirabayashi et al. would have been obvious to one of ordinary skill in the art in order to obtain the advantages discussed above, i.e., improvement of the coating operation with the advantage of running at high speed, can be used with any liquid coating independently of the viscosity and solid content.

9. Claims 2-20, 22-34, 36-37 are rejected under 35 U.S.C. 103(a) as obvious over Yokota, WO 01/768884 A1, (Equivalent US Patent No. 6,746,718 has been used as the translation) in view of Kustermann, US Patent No. 6,146,690 or Suga et al. or Clarke et al., with or without Mitami et al., cited above.

Yokota teaches a method of making a coated substrate by coating said substrate using a free flowing curtain coater, column 2, lines 20-30 and column 17, lines 17-40.

The curtain can be multilayered, see column 17, lines 15-40, forming a composite multilayer curtain. In column 17, lines 30-40, Yokota teaches that the curtain can be

formed with three layers and that the layers can contain at least one pigment, that could be talc, calcium carbonate, kaolin, etc., see column 13, lines 15-30. Yokota teaches also the use of polyvinyl alcohol as a binder, see, column 12, lines 40-55. Yokota is silent with respect to the solid content of the coating or the speed of the web at the coating operation. However, Kustermann teaches that it is known in curtain coating to provide solids content between 5 to 80%, preferably between 30 to 75%, see column 2, lines 50-60 and that the web speed can be greater than 600 m/min, preferably greater than 1000 m/min. Moreover, Mitami et al. teach a curtain coater that can be used with coating liquids at any viscosity and solid content, i.e., solid matter, and can be operated at web speed over 2000 m/min, see column 6, lines 25-51. The advantages of using such device, coater, are taught in column 3, line 55 through column 4, line 56, some of which are: minimize the quality defects due to inferior drying, web tearing, and contamination of a coating apparatus, etc. Also the coating can be done at high speed, see column 6, lines 47-51. Therefore, the use of the claimed solid content would have been obvious to one of ordinary skill in the art since it is conventional, see Kustermann, and the velocity of the web as claimed would have been obvious to one of ordinary skill in the art, since he/she would have reasonable expectation of success if the coating process is carried out at the claimed speed in view of the teachings of Kustermann and/or Yokota. Note that using the coating apparatus taught by Mitami et al. in the process taught by Yokota would have been obvious to one of ordinary skill in the art in order to obtain the advantages discussed above, i.e., improvement of the coating operation with the advantage of running at high

speed, can be used with any liquid coating independently of the viscosity and solid content.

As to the viscosity of the coating slip, as explained above, both Suga et al. and Clarke et al. teach that for multilayer curtain coatings, the viscosity of the coating composition should be high at high shear rates in order to eliminate/reduce air entrapment and puddling, Clarke et al., column 3, lines 41-50 and 60-67 and to eliminate sagging, heeling and air entrapment, Suga et al., column 2, lines 10-26, when the curtain coating is operated at high speeds. Note that both Suga et al. and Clarke et al. teach viscosity at high shear rates above 50 cps, ($50 \text{ mPa}\cdot\text{s}^{-1}$). Therefore, adjusting the viscosity to the claimed levels, i.e., using thickening, gelling agents, etc., would have been obvious to one of ordinary skill in the art in order to operate the coating process at high speeds while reducing sagging, air entrapment, heeling, and puddling. Note also that applicants admits that in general the viscosity of coating slips at high shear rate is usually greater than $50 \text{ mPa}\cdot\text{s}^{-1}$, see paragraph bridging pages 3 and 4.

Response to Arguments

10. Applicant's arguments filed on July 31, 2007 have been fully considered but they are not persuasive.

Applicants argue that the composition of the cited references does not have the morphology and thickening index as claimed. Which may be true, however it is clear that using the using the coating compositions having a shear thickening index as claimed, would have been obvious to one of ordinary skill in the art if the coating operation is carried out at shear rates below the transitional point, i.e., the point in which the composition start thickening or start the

Art Unit: 1791

blocking behavior. The claims only require that such composition is used, and are silent as to shear rate of the coating process, i.e., above or at the point in which such phenomena occur. As for claim 3, it is the examiner's position that the morphology of the coating composition of the cited references would not be destroyed at the claimed range, i.e., below 500,000 1/s. Note that the claimed range includes very low shear rates, including zero (0). As for the size of the pigments of claim 36, coating pigments within the claimed range it is well known in the art¹ and therefore, the use of such pigments as part of the coating operation would have been obvious to one of ordinary skill in the art.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure in the art of "Free flow curtain coating."

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

¹ See for example US Patent No. 7,208,068 or US Patent Application Publication Nos. 2004/0013815 and 2006/0005933 just to mention a few.

Art Unit: 1791

however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José A. Fortuna whose telephone number is 571-272-1188. The examiner can normally be reached on 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P. Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/José A Fortuna/
Primary Examiner
Art Unit 1791

JAF